

a year on an average. Since the establishment of this station in 1871, the mean number of foggy days dense enough to obscure objects a thousand feet distant has averaged nine for the entire year in San Diego.

During the late spring and early summer months the moisture-laden sea breeze carries over the land, not "tons upon tons of water," but of vapor that is visible as stratus cloud at from 500 to 1,000 feet altitude, and the cloud layer is so thick as to modify, and in some instances practically nullify insolation. At such times the sunlit bases of the mountains, 15 to 20 miles distant, beyond the cloud layers, can be readily seen. The temperature beyond the low cloud limit is frequently from 25° to 30° above the temperature at San Diego. That the thick stratus cloud presents quite an obstacle to the sun's rays is shown by the thermograph trace, which, during these not infrequent days, registers a horizontal line with but two or three degrees variation. This cloud is locally known as "high fog," which is but a popular definition of stratus cloud. The relative humidity near the earth is about normal during these times, ranging from 70 to 80 per cent.

Fog at the ground level is beneficial to orchards only in so far as it freshens the leaves and prevents evaporation from the soil. That it can never do much to supplement irrigation, nor the direct work of rainfall in watering the soil, is apparent when the infrequency of fog dense enough to deposit even 0.005 of an inch is considered. In addition to the normal rainfall of 10 inches, about a quarter of a million gallons of water for each acre is needed annually for citrus fruit. Allowing 80 trees to the acre, it is readily seen how insignificant the water condensed from a few foggy nights would be to a tree requiring more than 3,000 gallons as an annual water supply.

#### THE FLOOD OF JANUARY, 1880, AT BASSETTERRE, ST. KITTS, W. I.

By WILLIAM H. ALEXANDER, Observer, Weather Bureau.

While strolling one morning along the streets of this city the writer's attention was attracted to a plain, massive monument in the cemetery on which he read the following inscription: "Sacred to the memory of those who perished in the flood in Basseterre, St. Christopher, on the 12th of January, 1880, and commemorative of that awful visitation, in which 231 persons lost their lives, of whom 101 are buried here."

Beyond the mere facts as to dates and results, as set forth in the above inscription, there seems to be no official record bearing on the event, and I have compiled the following lines by the help of the memory of eyewitnesses:

It seems there were no premonitory signs of the impending disaster further than toward sunset an unusual warmth was felt which continued up to 9 o'clock p. m., when "an intense cold set in," then a light shower of rain fell. The clouds gathered early in the evening, and very soon the city was enshrouded in intense darkness. "The darkness could almost be felt."

Occasional flashes of lightning accompanied by "deep rumbling thunder" now and then relieved the painful feeling. About 11 o'clock the rain began again, and eyewitnesses say it "looked like sheets of water pouring out of the clouds." Soon the place was flooded, and ere long the water began to creep into the houses, to the great consternation of the inmates, who, upon attempting to escape, found the streets like rivers, making egress not only unsafe but well-nigh impossible. Those who were so fortunate as to possess an "upstairs" availed themselves of the security afforded by a more elevated position, but unfortunately the great bulk of the population lived then, as now, in little one-story, one-roomed houses (if one can call them houses at all) built of light material and loosely put together, so that soon houses and

all began to move seaward. The rain continued for about four hours, resulting as above indicated in the drowning of 231 persons certainly, and possibly more, beside the loss of property.

Many were buried beneath a layer of mud several feet deep that came down from the fields and mountains.

Of course, all gages and marks by which the amount of the precipitation could be measured or estimated, were either swept away completely or entirely submerged, and only individual opinions on this point can now be had. It is estimated that 23 inches fell within the four hours, and this augmented by the overflowing of the mountain streams, caused the great destruction of life and property. As in the days of ancient Babel so these people have attempted to fortify against any further disaster of this kind, not by erecting a tower but by encircling the city with a stone wall intended to check and divert the mountain streams into other channels.

[It is very much to be desired that the observers, located at stations whose climate is but little known to the citizens of the United States, should compile brief abstracts of all available records bearing on the climatology of such locations, especially matters affecting commerce, agriculture, and hygiene, or instructive from the point of view of the theoretical meteorologist. It requires much previous reading and study to prepare oneself for profitable scientific work when traveling into distant regions. Our observers at isolated stations, who are perhaps not confident of remaining long at any one place, can best begin their local studies by the collection of past records and by personal acquaintance with older local observers. Original manuscript records of work done in the tropical regions are very likely to be destroyed by mold and insects, even if not lost through neglect. The preservation of these original records is highly desirable, as they have never or rarely been published in full and contain the data for many important researches. Such manuscripts are doubtless worth asking for with a view to their future preservation in the fireproof vaults of the Weather Bureau. Many stations recently occupied by the Weather Bureau have also been previously occupied by other observers, and for the sake of the continuity of record, it is vitally important to institute a careful comparison between the old and the new instruments and the peculiarities of their respective localities.—Ed.]

#### DERECHO, NOT TORNADO, OF MAY 16 IN OHIO.

By J. WARREN SMITH, Section Director.

At about noon on May 16 a wind squall entered northwest-ern Ohio and passed eastward across the State at the rate of about 50 miles an hour. It unroofed and damaged many buildings, leveled fences and a large number of oil derricks, and broke down orchard, shade, and forest trees.

The first damage noted in this State was in the western part of Gorham township in Fulton County, where a school house was blown down and several pupils injured. The following items from the teacher, Miss Fisher, will prove of interest:

The building in which I was teaching was a brick structure, put up in the cheapest possible manner, size about 28 by 34. The storm came up from the west and traveled in a southeasterly direction, the wind being from the southwest. It had the appearance of an ordinary heavy rain and wind storm. The storm had passed to the north when the wind turned to the northwest. It blew straight ahead as was conclusively proven by the fact that it did not pick up anything from the ground, not even disturbing a stick of wood on the wood pile. The wind seemed to dip and sweep the ground for 50 or 100 rods, then rise and pass over a mile or more, then fall again. I have no definite idea of the velocity of the wind, but it blew very hard and lasted one or two minutes; it was accompanied by a deluge of rain. The school building was a complete wreck, valued, together with its contents at about \$1,000. There were 25 scholars within, of whom 5 were seriously and 8 slightly injured.